CLAIMS

[1] A pressure reducing valve comprising a valve housing (90) made by combining a body (34) and a cover (91), a diaphragm (93) of which rim is sandwiched between the body (34) and the cover (91), a diaphragm rod (128) held at the center of the diaphragm (93) via diaphragm retainers (125, 127), a valve axis (114) having one end thereof detachably coupled to the diaphragm rod (128) and the other end slidably fitted into a guide opening (105) provided on the body (34) side, and a valve element (113) provided in an intermediate portion of the valve axis (114) and capable of being seated at a valve seat (112) fixedly placed in the body (34) and opening a valve hole (111) for having the valve axis (114) movably inserted therein at the center, characterized in that a valve action unit (120) is mounted to the body (34) in a state of having one end of the valve axis (114) projected from the valve hole (111) and the other end of the valve axis (114) slidably fitted into the guide opening (105), the valve action unit being formed by assembling in advance a valve seat member (100) having the valve hole (111) and the valve seat (112) provided thereon, a guide member (106) having the guide opening (105) and pressed into the valve seat member (100), and the valve axis (114) on which the valve element (113) is provided.

[2] The pressure reducing valve according to claim 1, wherein a fitting concave portion (135) for swingably fitting a voluminous portion (114a) provided at one end of the valve axis (114) is coaxially provided at the end of the valve axis

(114) side of the diaphragm rod (128), and a clip member (137) engaged with the voluminous portion (114a) from the valve seat member (100) side is detachably inserted into a slit (136) provided on the diaphragm rod (128) along a plane orthogonal to an axis line of the diaphragm rod (128).

[3] The pressure reducing valve according to claim 1, wherein the body (34) has a concave portion (94) facing the diaphragm (93) side provided thereon, and a bulkhead member (96) has the valve axis (114) penetrate airtightly and movably, and partitions a pressure action chamber (121) facing a face of the diaphragm (93) and a decompression chamber (101) for generating a gas pressure acting on the pressure action chamber (121) and thereby penetrating the valve hole (111), the bulkhead member (96) being made by press-stamping a sheet iron and fixed on the body (34) in the state of fitting into the concave portion (94).

[4] The pressure reducing valve according to claim 3, wherein the bulkhead member (96) is fixed on the body (34) with a bolt (98) having a diameter expansion head (98a) for regulating a deflection to the pressure action chamber (121) side of the diaphragm (93) by contacting a plane on the pressure action chamber (121) side of the diaphragm (93).

[5] The pressure reducing valve according to claim 3, wherein the bulkhead member (96) has a continuous hole (166) leading to the pressure action chamber (121) provided in a portion contacting an inner surface of the concave portion (94), the body (34) has an outlet passage (164) leading to the

decompression chamber (101) provided thereon, and an aspirator passage (167) provided on the body (34) with one end thereof leading to the continuous hole (166) has the other end communicating with the outlet passage (164).

[6] The pressure reducing valve according to claim 5, wherein the other end of the aspirator passage (167) is connected to an aspirator tube (168) mounted on the body (34) with an opening toward a downstream side of a gas flow direction inside the outlet passage (164).

[7] A regulator for gas including the pressure reducing valve according to claim 1, wherein at least an electromagnetic isolation valve (36) and the pressure reducing valve (37) are provided on the body (34) on which an inlet passage (59) and the outlet passage (164) are provided so as to intervene between the inlet passage (59) and the outlet passage (164), and an oil filter (38) mounted between the pressure reducing valve (37) and the outlet passage (164) is placed on the body (34).

[8] The regulator for gas according to claim 7, wherein the body (34) has a mounting concave portion (148) provided thereon, and the oil filter (38) having one end thereof inserted into the mounting concave portion (148) is sandwiched between the body (34) and a filter cover (42) detachably mounted on the body (34) by covering a projection of the oil filter (38) from the body (34).

[9] The regulator for gas according to claim 8, wherein the oil filter (38) has a mesh portion (153) for allowing a gas flow in a part of a side wall of a cylindrical filter case

(152) made of a synthetic resin, the body (34) has a catching hole (151) opening at a closed end of the mounting concave portion (148) provided thereon to lead to a gas passage (150) provided on the body (34) so as to lead a gas pressure-reduced by the pressure reducing valve (37), an elastic member (154) has integrally a cylinder (154a) for fitting the one end into the catching hole (151) elastically and a collar portion (154b) jutting outward from the cylinder (154a) by being sandwiched between one end of the filter case (152) and the closed end of the mounting concave portion (148) mounted thereon, the elastic member (154) being mounted to one end of the filter case (152) to have the cylinder (154a) lead to the inside of the filter case (152), and an oil storage chamber (156) for storing the oil oozing from the mesh portion (153) of the oil filter (38) is formed around the oil filter (38) in the filter cover (42) so as to have an upper end of the oil storage chamber (156) lead to the outlet passage (164).

[10] The regulator for gas according to claim 8, wherein a drain hole (157) liquid-tightly closed by a drain bolt (159) is provided at the bottom of the filter cover (42).

[11] The regulator for gas according to any one of claims 8 to 10, wherein a relief valve (39) is mounted on the filter cover (42).

[12] The regulator for gas according to claim 9, wherein the filter cover (42) is mounted on an undersurface (34b) of the body (34), a part of the pressure reducing valve (37) is mounted on the body (34) from a topside (34a) of the body (34), and

a back-pressure hole (160) for exerting a back pressure on the pressure reducing valve (37) is provided on the body (34) while leading to the oil storage chamber (156).